7 CASE STUDY

While the previous chapters in this Guidance Document have addressed individual elements and issues related to concepts of operations for regional integration programs, the final chapter is designed to integrate the guidance provided in this document through a single case study. We will present as a comprehensive case study, a regional concept of operations developed by the Delaware Valley ITS Technical Task Force. This regional initiative is referred to as the Regional Integrated Multi-Modal Information Sharing (RIMIS) system. The referenced documents along with noteworthy material from participants' interviews, will be used to illustrate salient points.

7.1 CHAPTER OVERVIEW

The purpose of this chapter is to provide a detailed real-world example of the concepts and guidance provided in the handbook. Its objectives are:

- To illustrate how the elements of the concept of operations were developed to address the needs of the RIMIS system.
- To document lessons learned during the RIMIS concept of operations development process.
- To document lessons learned during the use of the concept of operations in the RIMIS development process.

7.1.1 Relationship to Previous Chapters

This chapter serves to illustrate, through a real-world example, how the information provided in the previous chapters is applied to the development and use of a particular regional concept of operations.

7.1.2 Chapter Sections

- Case Presentation Structure
- Case Study
- Lessons Learned

7.2 CASE PRESENTATION STRUCTURE

The material in this section describes how the case study will be organized and presented. This chapter parallels the organization of material in previous chapters of this handbook.

7.2.1 System Overview

This section will briefly describe the RIMIS initiative that serves as the subject of the case study.

7.2.2 Core Elements

This section will describe RIMIS's concept of operations with respect to each element of the concept of operations' standard.

7.2.3 Development Process

This section will focus on lessons learned during the development of RIMIS's concept of operations. Specific areas of focus will parallel the structure of the handbook. These will include issues concerning the following:

- Resources
- Performance Measures

7.2.4 Use of Concept of Operations

This section will focus on how RIMIS's concept of operations is being used. Specific areas of focus will parallel the structure of the handbook:

- Requirements Development
- Support for Cooperative agreements
- Planning Support
- Lessons Learned

7.3 CASE STUDY

The case-study presented in this chapter is the Regional Integrated Multi-Modal Information Sharing (RIMIS) system being developed for use in the Delaware Valley Region, a region including Bucks, Chester, Delaware, Montgomery and Philadelphia counties in Pennsylvania; and Burlington, Camden, Gloucester and Mercer in New Jersey. The objective of the RIMIS system is to provide a link among transportation agencies, emergency management agencies, traffic reporting services and others so that transportation information can be shared and events can be managed effectively through resource sharing.

7.3.1 System Overview

Background information on RIMIS is well presented in the concept of operations. The following excerpt from the concept of operations executive summary provides essential descriptive information on RIMIS.

Background of RIMIS

Background

Since June 1998, the Delaware Valley ITS Technical Task Force (TTF) has been responsible for coordinating ITS activities in the Delaware Valley. It is composed of technical staff from over 30 different organizations including departments of transportation, highway and bridge toll authorities, transit agencies, the City of Philadelphia, state and local police departments, transportation management associations, Federal Highway Administration, and other organizations involved in transportation operations.

A subcommittee of the TTF, composed of core regional agencies, was formed to actively guide RIMIS' development. This RIMIS Subcommittee includes representatives from the Delaware River Port Authority (DRPA), Delaware Valley Regional Planning Commission (DVRPC), New Jersey Department of Transportation (NJDOT), Pennsylvania Department of Transportation (PennDOT), the City of Philadelphia, SEPTA, Pennsylvania Turnpike Commission (PTC), and Federal Highway Administration (FHWA).

Regional agencies responsible for the safety, efficient operation, and management of the transportation network in the Delaware Valley have recognized the need for reliable inter-agency information sharing and coordination via enhanced communication technology. This need has become very clear in recent years, as the regional transportation network has reached, and -- at many times and locations -- exceeded its capacity.

In developing the Regional ITS Architecture, the TTF identified RIMIS as the mechanism to foster interagency information sharing and coordination. Six alternative coordination scenarios were evaluated to improve information-sharing among the agencies; a decentralized approach utilizing a message-based information exchange network (IEN) was selected as most appropriate. It was recognized that existing ad hoc communications do not work; however, creating a centralized regional operations center or a new regional agency similar to TRANSCOM would not be very practical from an institutional perspective.

The Delaware Valley region includes nine counties in the Philadelphia metropolitan area and supports a residential population of over 5 million people, with employment of over 3 million. These people are served by an extensive intermodal transportation network consisting of expressways and toll facilities, key arterial highways, light and heavy rail lines, and express and local bus routes. A large sports and entertainment complex in South Philadelphia, the Philadelphia International Airport, 30th Street Station, and major freight terminals are some of the key nodes on the transportation network. The major bridges crossing the Delaware River in the region are among the key "links" on this network.

The population shares the network with commercial and industrial transporters of goods, bulk materials, and other commodities as well as with long-distance, inter-regional highway and rail traffic. This combined network demand regularly causes traffic congestion and delays, particularly during peak periods for weekday commuting, and directly before and after scheduled special events. Emergency events and incidents exhibit magnified impact in this environment, and their effects propagate rapidly throughout the network and beyond.

In this complex transportation environment, management and communications roles are shared by many agencies and institutions with various jurisdictional boundaries:

- Three state Departments of Transportation
- Philadelphia Streets Department
- Three State Police forces
- Five major transit agencies operating bus and rail services
- Four authorities operating Delaware River bridges
- Four Turnpike Authorities
- Philadelphia Police and Fire departments
- County 911 centers, Local Fire, Police and EMS
- County public works agencies
- Traffic reporting services, and multiple county and sub-regional transportation management associations (TMAs)

For the most part, the agencies involved in managing *regularly-occurring events and minor incidents* within the transportation network, have extensive experience in managing these situations. Some agencies have procedures and protocols for action and coordination with other agencies. Other agencies coordinate on a more ad-hoc basis. But these communication challenges are magnified greatly during *major incidents and unanticipated events.* For effective action, the key is timely notification to all parties with responsibility for responding -- and timely access to dependable information on status and conditions on the transportation network.

Figure 7.1:**Current Situation:** this section is an excerpt from the executive summary of the Concept of Operations of the RIMIS project, which was written by the Delaware Valley Regional Commission. This figure relates the origins of the RIMIS project, the entities involved and their responsibilities.

7.3. 2 Core Elements:

As discussed in Chapter 3, a complete concept of operations should cover the core elements as described in the ANSI/AIAA standard. The RIMIS Concept of Operations did address all ANSI/AIAA standard elements, with varying degrees of detail. This section illustrates how the RIMIS Concept of Operations addressed these elements.

7.3.2.1 Scope of the Project

The RIMIS Concept of Operations directly, and succinctly addresses the project scope. As seen in the following excerpt, in the Delaware Valley region transportation agencies have a common interest, which is to ensure that the safety and efficiency of the region's transportation network are enhanced. Congruent with this shared common interest is the need to create a system (RIMIS) to encourage better communications and information sharing between the many agencies in the region. Thus, this excerpt shows the following: benefits of better communication amongst the agencies, a list of operation centers which will be used by the decision makers to foster better communications and also the following extract details the kind of information that will be shared by the stakeholders that are involve with the RIMIS system.

MOTIVATION AND SCOPE OF RIMIS

Although transportation agencies in the Delaware Valley region are motivated by common interests in monitoring and enhancing the safety and efficiency of the region's transportation network and in managing the network's incidents when these occur, each agency has a primary mission and responsibility that determines operational priorities. In emergency situations, agency priorities often conflict. For example, an operational decision driven by concern for public safety often must trump concerns about traffic congestion. An important function of effective inter-agency communication is to ensure that all network agencies can recognize when such mission tradeoffs arise and to provide enough information for agencies to understand and mitigate the situation to the greatest extent possible.

Agencies involved in management of the transportation network have worked together through many events and incidents that have challenged the limited available channels of inter-agency communication. In this light, *the overall objective of RIMIS is to foster better communications and information-sharing between the many agencies in the region.* Meeting this objective is critical to the effective management of the complex transportation network in the Delaware Valley. The consensus among the stakeholders is that better inter-agency communications will:

- Enhance traffic management of recurring congestion and peak travel
- Provide for faster and more effective response to unexpected incidents and events
- Improve use of systems to inform and influence the decisions of travelers
- Help realize the full value of ITS/communications assets already deployed in the region
- Speed up the process of information request and transfer, which can be especially problematic during emergencies, when many normal staff or administrative functions are temporarily stopped or the situation has low priority in their agency
- Improve the region's incident and emergency response capabilities based on the analysis of past events, archived data exchanges, and communication patterns.

RIMIS will connect key decision makers and operations centers on an information network to make better use of existing information infrastructure (on both traffic and transit conditions) and to better respond to incidents and manage special events. These centers include:

- Traffic management centers
- Emergency management centers (including 911 centers, police, and fire departments),
- Transit Operations Centers
- Information service providers (e.g., traffic reporting services).

RIMIS will enable the following types of information to be shared to full potential among regional transportation stakeholders:

- Incident notification as soon as a problem is detected or reported
- Incident severity designation and expected duration
- Incident response decisions and activities
- Situational status on incidents and the "big picture" transportation context
- CCTV images to view traffic and incident conditions throughout the region
- Special events and management plans
- Traffic and transit conditions including route performance data
- Traffic management resources and status of current notifications and warnings
- Construction and maintenance activities that close lanes on expressways, detour routes, and bus routes.

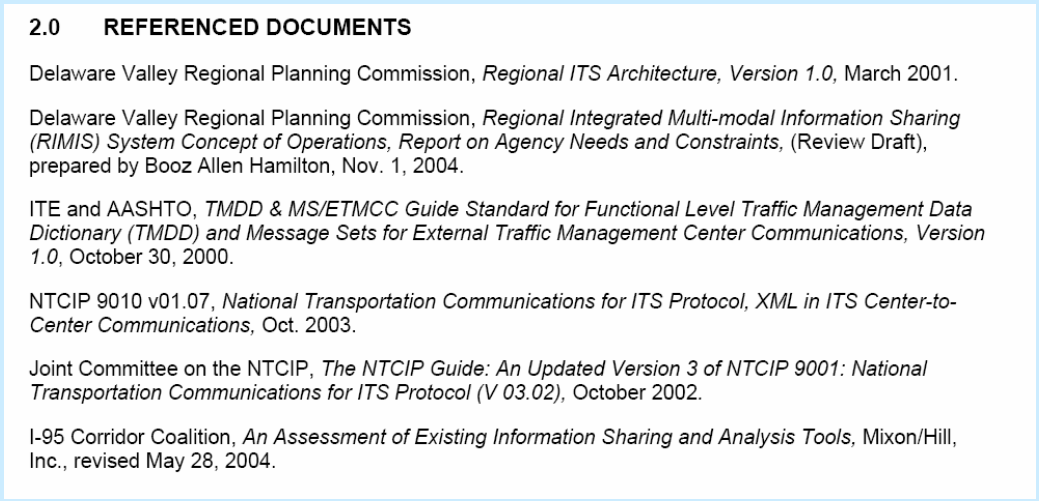
Figure 7.2: **THE SCOPE OF THE RIMIS PROJECT:** this section is an excerpt from the Concept of Operations document for the RIMIS project which was written by the Delaware Valley Regional Commission, highlighting the motivation behind the project as well as the benefits of better inter-agency communications. The operation centers involved in the RIMIS system are also mentioned in this passage, as well as potential regional transportation stakeholders.

7.3.2.2 Referenced Documents

Referenced Documents used in the RIMIS Concept of Operations Document are described in the example below. Note in this case that there were no general planning documents (such as the regional Transportation Improvement Plan) among the references used by the RIMIS Concept of Operations document. The referenced documents included:

- ITS Architecture Document: Documentation on the Regional ITS Architecture for the Delaware Valley Region
- Concept of Operations: A review draft of the Concept of Operations of the RIMIS system which was prepared by the Consultant
- Communications for ITS Protocol. There are two documents referenced with regards with communications, one deals with ITS protocol from center to center and the other focuses on an updated version of the NTCIP.
- Assessment Documentation: This document dwells on the evaluation of the existing information sharing and analysis tools in use in within the I-95 Corridor

Referenced Documents



2.0 REFERENCED DOCUMENTS

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Delaware Valley Regional Planning Commission, *Regional Integrated Multi-modal Information Sharing (RIMIS) System Concept of Operations, Report on Agency Needs and Constraints,* (Review Draft), prepared by Booz Allen Hamilton, Nov. 1, 2004.

ITE and AASHTO, *TMDD & MS/ETMCC Guide Standard for Functional Level Traffic Management Data Dictionary (TMDD) and Message Sets for External Traffic Management Center Communications, Version 1.0*, October 30, 2000.

NTCIP 9010 v01.07, *National Transportation Communications for ITS Protocol, XML in ITS Center-to-Center Communications,* Oct. 2003.

Joint Committee on the NTCIP, *The NTCIP Guide: An Updated Version 3 of NTCIP 9001: National Transportation Communications for ITS Protocol (V 03.02),* October 2002.

I-95 Corridor Coalition, *An Assessment of Existing Information Sharing and Analysis Tools,* Mixon/Hill, Inc., revised May 28, 2004.

Figure 7.3: **REFERENCED DOCUMENTS:** This figure details the reference sources used in this case study.

7.3.2.3 User Oriented Description:

Ideally, a user-oriented description will detail the system operation from the user's perspective, and as such ,will identify how system specific goals and objectives are achieved bearing in mind usual tactics, policies and constraints. In the case of this particular example (the RIMIS system), the approach taken was to list the particular user classes and describe the functions of these user classes and describe their respective interaction with the RIMIS system.

User Classes

User Class Interactions with RIMIS

User Classes	Interaction with RIMIS
Operators/Dispatchers • Responsible for monitoring internal agency systems and operations • Notify other staff, supervisors, internal and external departments, and appropriate authorities of adverse conditions requiring a response • Coordinate with fleet or field personnel • Provide coordinated response to traffic and incident issues by dispatching appropriate resources • Troubleshoot system operations.	• Monitor and operate agency systems and input and initiate RIMIS communications as conditions warrant • Input data directly into RIMIS and monitor, extract, and interpret data from RIMIS for potential response.

Figure 7.4 **THE USER CLASSES: This figure shows a list of the prospective users of the RIMIS system and the Individual descriptions of their functions as well as their interaction with the RIMIS system.**

User Classes

User Class Interactions with RIMIS

Information Technology Staff • Responsible for implementation, repair, and maintenance of agency communications equipment and infrastructure and databases. • Assess system operations, databases, and networks to troubleshoot potential system errors • Specify, procure, and installs, telecommunications infrastructure to support agency operational objectives and functions • Implement appropriate network security measures consistent with agency policies.	• Are not directly involved in entering information to RIMIS or using information from the system • Are key in maintaining the communication networks to ensure data and information flows from the agency data systems to RIMIS • Coordinate appropriate interfaces between RIMIS and agency databases and systems; monitor interfaces and troubleshoots when necessary; and facilitate RIMIS access through agency firewalls.
Emergency Management Authorities and Public Safety Operators/Dispatcher Managers • Consist of regional, state, and county entities responsible for ensuring the safety and security of employees and the general public • Evaluate existing security programs and plans for security enhancements that are compliant with state and federal regulations • Establish protocols for large-scale emergency notification, response and multi-agency coordination.	• Use RIMIS construction schedules, emergency alerts, public safety notifications, weather, and roadway conditions, and other features • Initiate notifications through RIMIS about major emergencies or hazards, responses, and direct actions. • Use RIMIS capabilities to provide emergency alerts and directions to the public via VMS signs and HAR devices.
Public Safety Operators/Dispatchers • Include 911 operators at the various 911 call centers and dispatchers at police, fire, and other emergency responder communications facilities • Primarily responsible for answering emergency calls and dispatching them to the appropriate emergency response agency • Initiate CAD logs for incidents, including initial call, incident details, dispatch details, and updates.	• Input incident information to RIMIS and initiate appropriate notification messaging (respecting that RIMIS does not supersede established protocols for incident management notification and coordination between Public Safety Answering Points and emergency responders) • Use RIMIS video, traffic speeds, and construction information to determine how to route emergency responders to an incident site and to implement detours.
Emergency Response/Law Enforcement Personnel • Include police, fire, ambulance, and other emergency response staff from the states, cities, counties, toll authorities, transit agencies, and related organizations.	• Provide information and updates to the public safety operators and dispatchers who then update RIMIS • Do not interact directly with RIMIS during initial implementation of RIMIS when access will be limited to personnel at key centers only • Enter information via mobile/wireless devices when future phases of RIMIS include remote capability.

Figure7.4 (continued): **THE USER CLASSES:** This figure shows a list of the prospective users of the RIMIS system and individual descriptions of their functions as well as their interaction with the RIMIS system.

7.3.2.4 Operational Constraints

A key purpose of the development of RIMS was to address operational constraints. To address institutional barriers, the Delaware Valley Region Planning Commission developed the RIMIS system rather than select a singular Department of Transportation (DOT) to create a system which would be unique but may not be compatible with the needs of the other interested parties or stakeholders. The following excerpt from the Concept of Operations addresses this.

Potential Operational Constraints

Agencies have requested a certain level of customization and filtering at their respective endpoints, to be able to filter certain data, messages, or both. This presents an operational constraint because filtering certain features or data will limit accessibility to full RIMIS functionality.

Because they do not have a consistent, regional mapping and spatial referencing system, agencies in the Delaware Valley are currently using independent systems for their data/ information/device display needs. A comprehensive regional map showing real-time status of transportation facilities or devices to be generated from various agency systems will require the region to adopt a standard map and configure the interfaces appropriately.

Another operational constraint is the addition of new centers, new data sources/interfaces, or changes to agency systems or data that are already connected to RIMIS. Changes to data elements made at the RIMIS or agency level may impact the information content being shared.

One constraint of the initial RIMIS implementation is the system will be accessible only via workstations at the participating agency centers. In-the-field personnel will not have access for viewing or providing information directly to RIMIS. Enhancements to RIMIS for consideration should include wireless remote devices to provide access to in-the-field personnel.

Agencies have requested that RIMIS account for a single point of entry at each agency (for messages and data). A constraint or issue with a web-based GUI and the accessibility it offers may be that many people at an agency could access RIMIS simultaneously.

Some agencies have expressed interest in full integration with their systems (i.e., no stand-alone workstation); others have expressed serious concerns about any RIMIS interface with their respective systems and may require a stand-alone workstation.

To accommodate the GUI guidelines, local interfaces, and requested level of customization, some impact on existing agency software must be considered and accepted. Each agency will need to determine the extent of modification to its software that will be needed.

The proposed system is decentralized, which poses some constraints because the design does not rely on a prominent central database but rather on a virtual database used by all of the agencies.

Without a central staff to operate or maintain RIMIS, its stakeholders will rely on outside vendors for maintenance and support functions. Under this scenario however, agencies will still be required to provide management staff to oversee the performance of these vendors.

Figure 7.5: **OPERATIONAL CONSTRAINTS:** This figure details a list of constraints which the DVRPC and RIMIS stakeholders have identified that the RIMIS system could potentially face.

According to the RIMIS Concept of Operations document, the constraints mentioned in figure 7.5 are likely due to the following: the proposed design (of the RIMIS system), concept, functionality, potential users and also local interface requirements. Due to local interface requirements, which may differ from one locale to the next, additional constraints were anticipated.

7.3.2.5 Operational Environment

The operational environment of the RIMIS system is described in the Concept of Operations as illustrated in Figure 7.6. The focus is placed on the promotion of communication, responsiveness, trust between transportation network managers (i.e. emergency responders, information service providers and other RIMIS stakeholders). These factors are the staples of the operational environment of this particular system and a noteworthy fact is that agencies may permit an outside entity to gain access to certain data inside their firewalls. However, agencies that do not comply with National ITS Standards, data dictionaries and message sets will have to convert their data before they would be allowed such access.

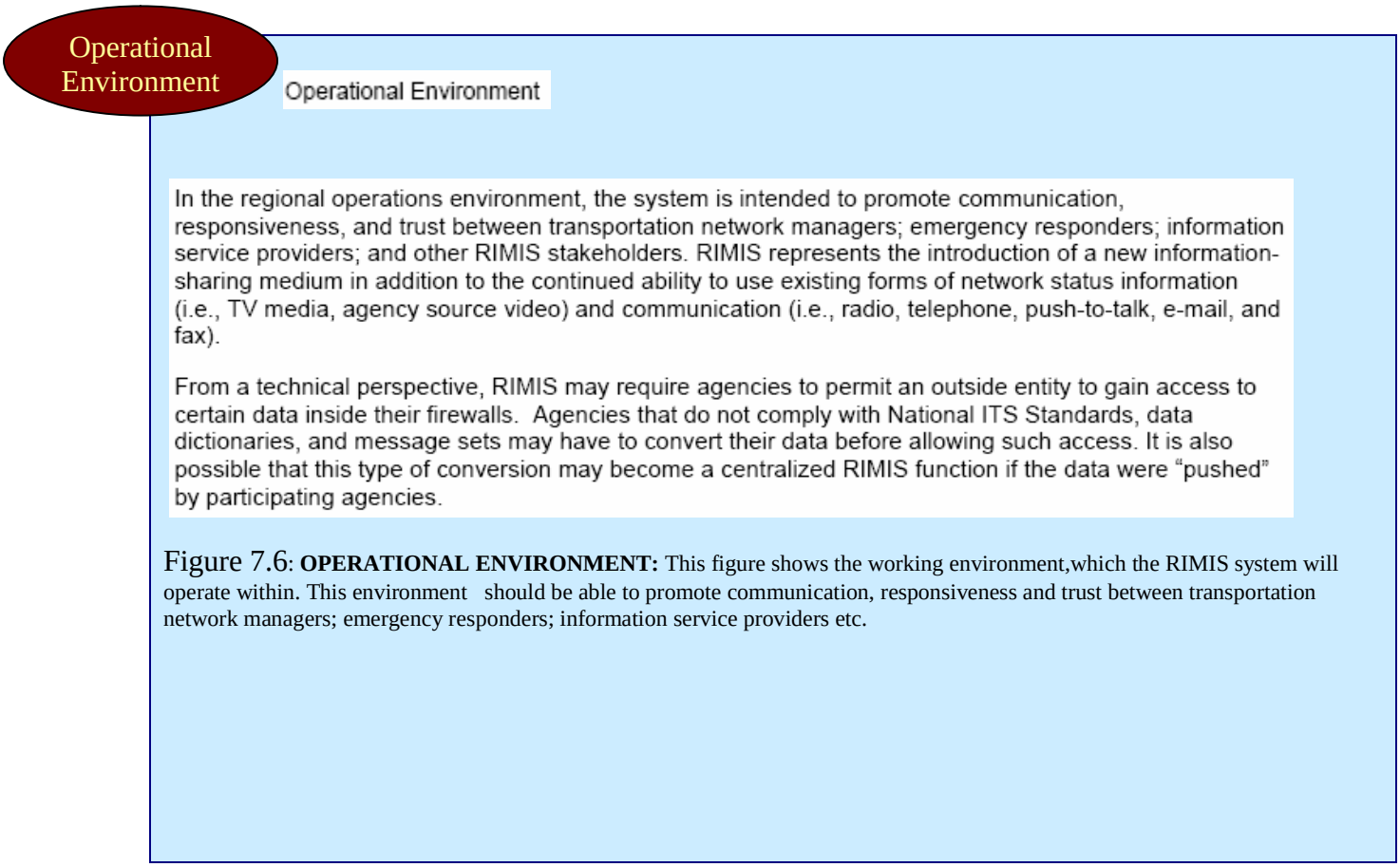

Figure 7.6: **OPERATIONAL ENVIRONMENT:** This figure shows the working environment,which the RIMIS system will operate within. This environment should be able to promote communication, responsiveness and trust between transportation network managers; emergency responders; information service providers etc.

7.3.2.6 Support Environment

The RIMIS Concept of Operations directly addresses support requirements for the system. In the following example, the document addresses the fact that once the first version of RIMIS system is accepted and becomes operational ,the secondary phase, which is characterized by an Operations and Maintenance cycle, begins. This is important because a step-by-step approach is more appropriate because if there is a problem it would be easier to resolve, due to the fact that the issue can be addressed in phases. The facets of the support environment allow a 24/7 system availability for users. This is very important because there is no timeline on the occurrence of incidents, so it is crucial that the system is always operational to address any concerns. The extract below dwells on the nature of the cost attributed to the O&M and the fallout of this because the RIMIS system is multi-agency in nature.

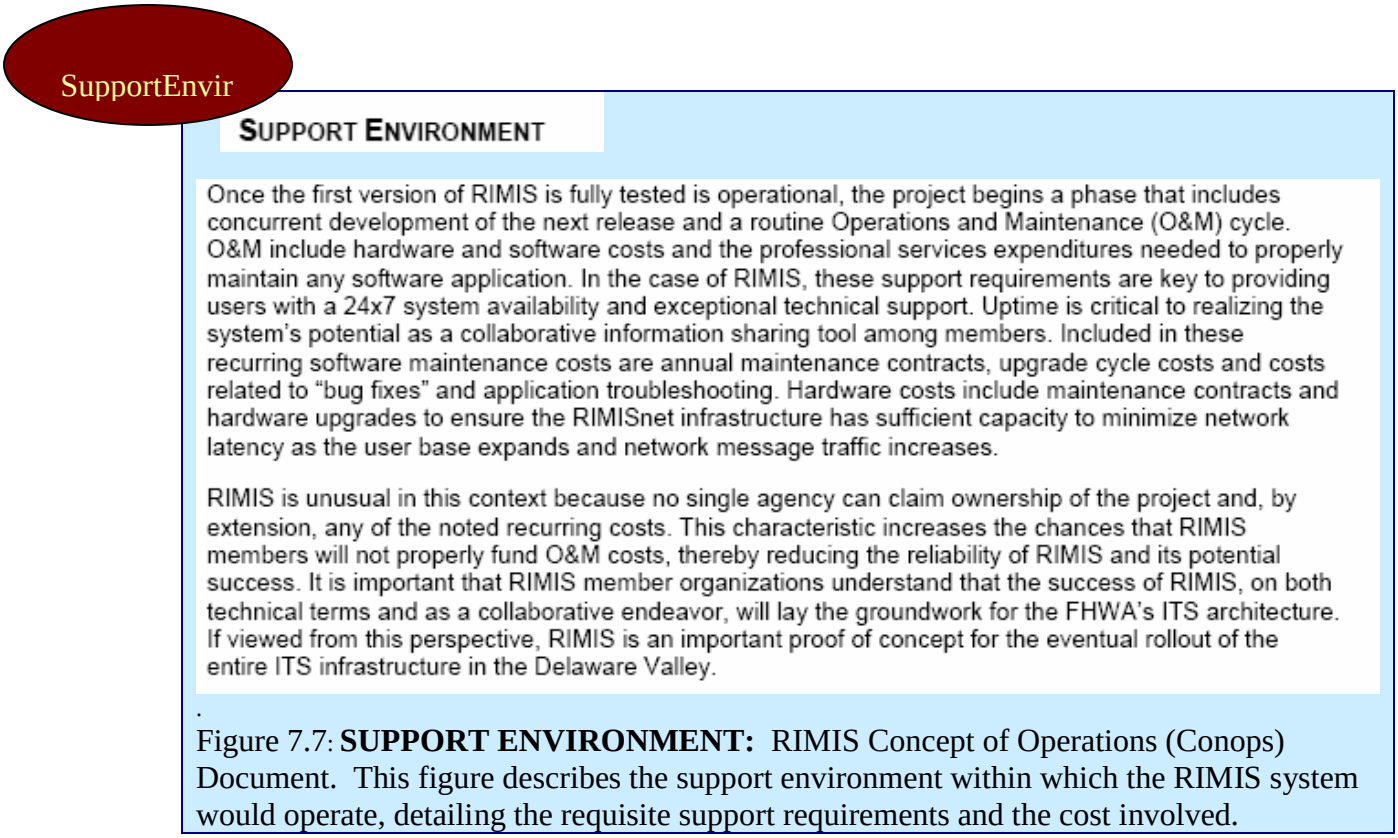

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Figure 7.7: **SUPPORT ENVIRONMENT:** RIMIS Concept of Operations (Conops) Document. This figure describes the support environment within which the RIMIS system would operate, detailing the requisite support requirements and the cost involved.

7.3.2.7 Operational Scenarios

The RIMIS Concept of Operations states, “Operational scenarios provide a means of testing the RIMIS concept in the context of operational situations. They allow designers and implementers to derive operational assumptions of how the system needs to function and provides the basis for more detailed requirements to be developed following consensus on the operational concept. Ad-hoc interactions among participants demonstrated how RIMIS functionality could supplement current and established operational actions and objectives. It is interesting to note a graphical user interface (GUI) was used to test the RIMIS system.” (RIMIS Concept of Operations document, 6-1) Congruent with this statement the following figures bring to the fore the operational scenarios as exhibited; in figure 7.8, a couple of operational scenarios are described that focus on the reaction to a series of events which may be either planned or unplanned.

Figure 7.9 shows an important facet of the RIMIS Concept of Operations - the use of a “model” Graphical User Interface (GUI). One of the guiding principles of RIMIS development is to allow participating agencies a level of flexibility and customization in designing their particular GUIs. The purpose of these sample screen shots is to convey basic RIMIS functions and those features that are expected to be used by various partners. Specific details of the GUI, including appearance, transitions, buttons, and GIS map preferences, will need to be developed during the design phase.

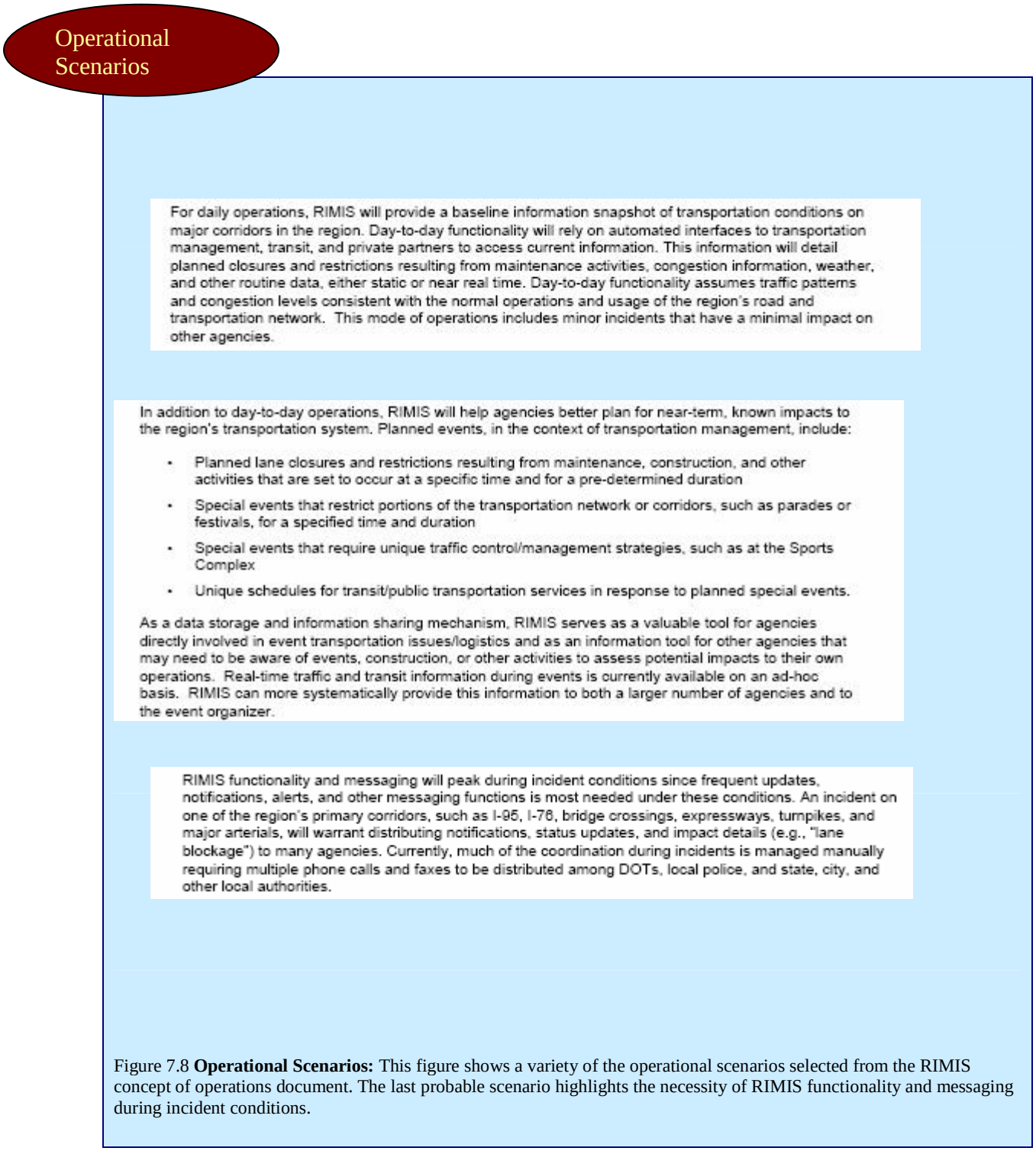

Figure 7.8 **Operational Scenarios:** This figure shows a variety of the operational scenarios selected from the RIMIS concept of operations document. The last probable scenario highlights the necessity of RIMIS functionality and messaging during incident conditions.

Screen shot

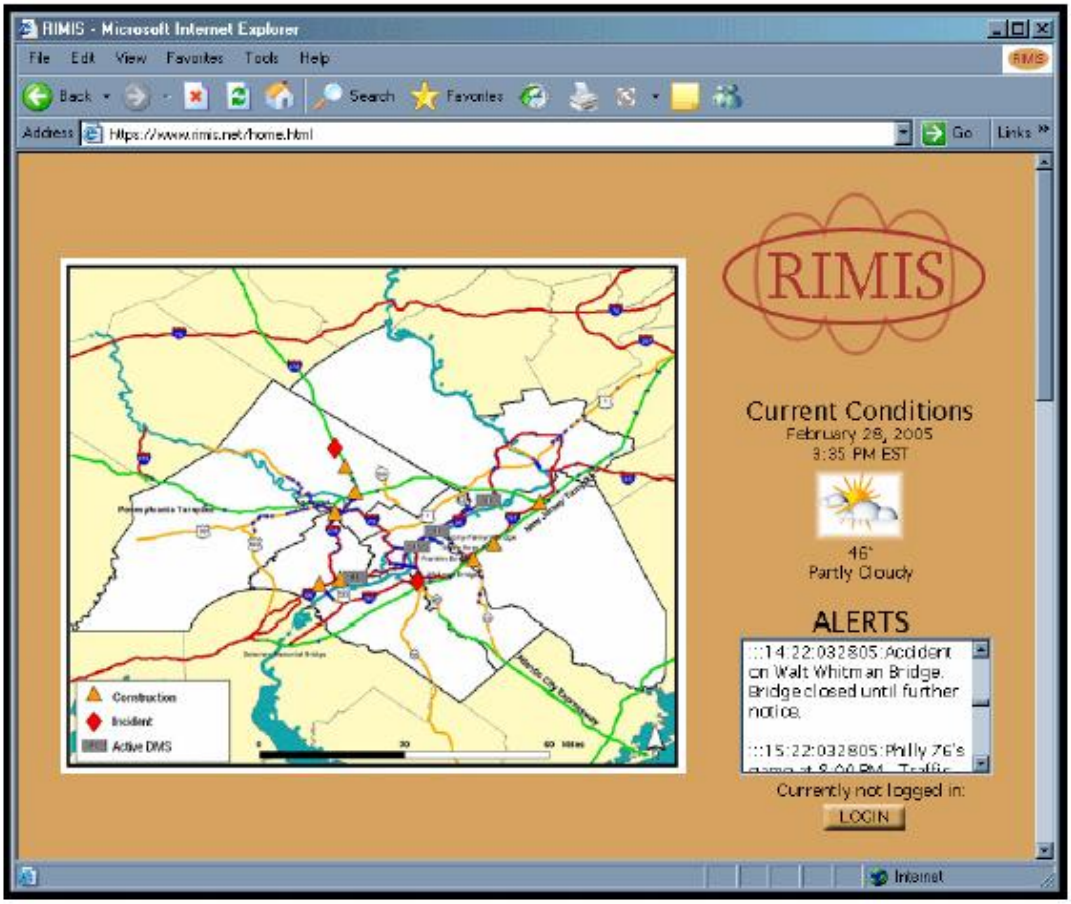

Figure 7.9: Graphical User Interface: this figure shows a sample screen shot of a Graphical User Interface which would be used by the users of the RIMIS system to access its functions and features. This particular screen shot provides users with the following features:

• Instant view of the region's transportation system via the GIS map
• Current date, time, and weather conditions
• Daily view of major events (planned or unplanned) impacting the region's transportation system
• Access to secure login screen.

7.3.3 Development Process

Staff from the Delaware Valley Region Planning Commission developed the Concept of Operations of the RIMIS system with the assistant of a systems engineering consulting firm. It is important to note that this project was pursued with the desire to avoid creating any additional levels of bureaucracy. The consultant who was contracted to help in developing the RIMIS project assisted in the areas of software integration, developing functional requirements (ongoing process), outreach to the stakeholders and creating an RFI (Request For Information) document. From the beginning development team solicited input and support from agencies throughout the region. Using a collaborative process, they identified goals, initiative areas, and associated high-level functions in the development of a regional concept. This development process will be discussed in this section and will include example information about resources, performance measures, and planning support.

Three staff members of DVRPDC spent a considerable amount of time developing the RIMIS concept of operations over the course of 1 year. In general, they devoted 3 full days per week, each, to the project. In addition, a consultant was retained to support DVRPDC staff – the consultant contract was in the neighborhood of $100,000.

7.3.4 Use of Concept of Operations

At the time of the writing of this guidance document, the DVRPDC consultant is in the midst of completing the requirements for RITIS. In the process of developing the necessary requirements based upon the Concept of Operations document, a Request for Information is being utilized. A description of the objectives of using the RFI is provided in Figure 7.10.

RFI Objectives

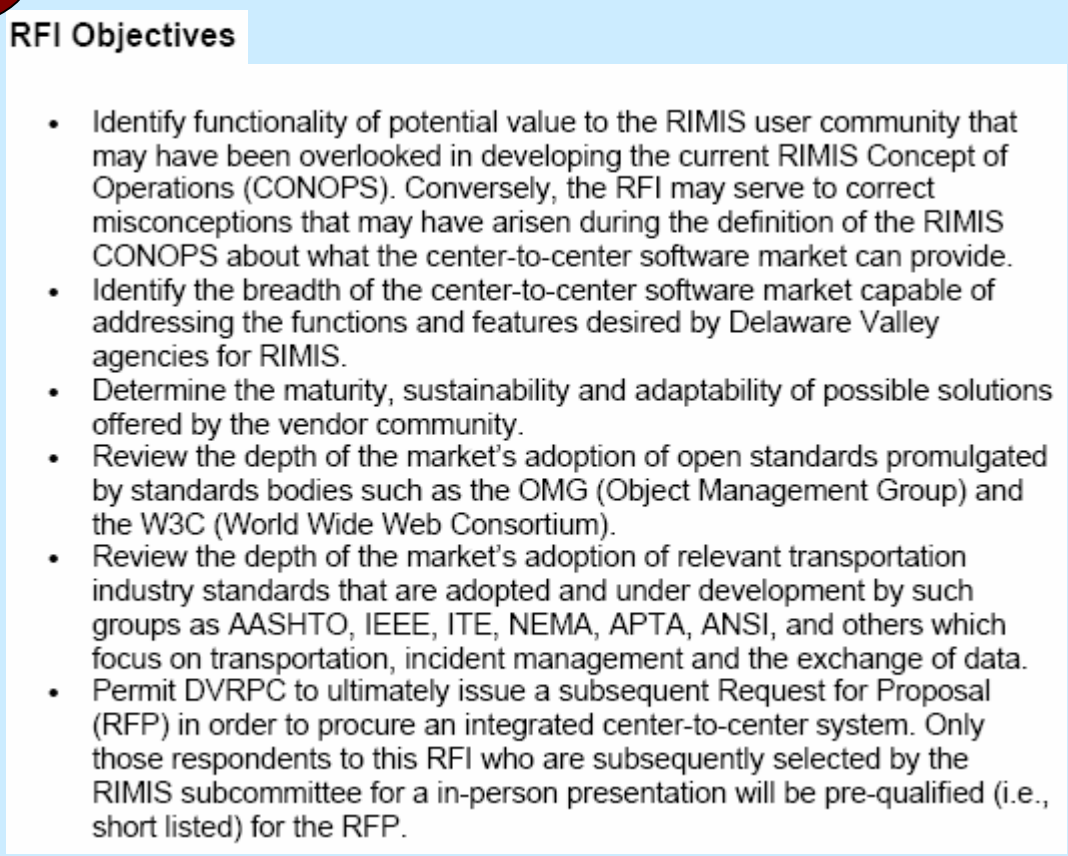

Figure 7.10: RFI OBJECTIVES: This figure shows the objectives of using the Request For Information and how this supports the Concept of Operations of the RIMIS system.

The RFI approach acknowledges that the concept of operations as produced has its limitations. Thus, as pointed out in Figure 7.10, the RFI seeks to identify the functionality of potential value to the RIMIS user community that may have been overlooked in developing the current RIMIS Concept of Operations. This illustrates that a concept of operations is never "done" – it is a long-term process. So therefore, the RFI was created as an addendum to the Concept of Operations document to address any loopholes or inadequacies.

Support for Cooperative Agreements:

As the Concept of Operations document on the RIMIS project addresses, the nature of this system is regional and as such cooperation among its contributing entities is a must. Thus, the RIMIS will require that there must be policies in place to allow the sharing of information among its members. The sharing of key data parameters can be done only to through the effective use of cooperative agreements. This is addressed directly in the Concept of Operations as illustrated in the following example, Figure 7.11.

Collaboration

"The DVRPC manages the development of RIMIS under the supervision of the RIMIS Subcommittee of the ITS Technical Task Force. In the future, RIMIS will require a permanent management structure and a formal agreement among the partnering agencies on how to fund and supervise RIMIS this is according to the RIMIS Concept of Operations document. Possible management configurations include assigning management functions to one of the agencies; rotating management functions among the agencies (e.g., yearly); contracting with a consultant to manage RIMIS administrative functions; hiring limited staff to oversee RIMIS; or some combination of these. Two examples of multi-agency coordination are TRANSCOM and the I-95 Corridor Coalition. The initial concept for TRANSCOM relied on agencies donating staff to TRANSCOM for brief time periods, which minimized hiring additional staff and fostered an interagency cooperation. The I-95 Corridor Coalition relied on a combination of permanent staff for administrative work and consultants who provided oversight of technical activities. As such the RIMIS project will seek to mimic aspects of the aforementioned collaboration (TRANSCOM and I-95 Corridor Coalition) by encouraging RIMIS management duties which includes the following types of activities:

- Establish and periodically update a multi-year business plan
- Approve annual budget including capital and operating costs
- Apply for federal funding
- Develop and update cost allocation plan
- Hold policy and technical meetings with RIMIS participating agencies
- Participate in coordinate meetings with the agencies
- Establish performance measures to monitor the effectiveness of RIMIS
- Determine when additional enhancements to RIMIS are required
- Prepare Requests for Proposals (RFP) and contracts for outside venders to manage RIMIS and technical consultants to enhance RIMIS
- Coordinate training programs and regional operation initiatives." (this is courtesy of the Institutional coordination of ITS in the Delaware Valley Region)

Figure 7.11: Regional Collaboration – This excerpt from the Concept of Operations illustrates collaboration and management issues associated with RIMIS.

The RIMIS Concept of Operations also supports various regional planning efforts. For example, as stated in the document, "each operating agency would have its own long range plan or vision for ITS deployment and would consider them along with the regional agencies and ITS regional vision (namely the RIMIS system) as they develop their capital plans. Individual agencies may request federal funding for ITS deployment through DVRPC's TIP, and would be required to certify that the expenditure of federal funds for ITS deployment would be consistent with the Regional ITS Architecture Requirements."

7.4 LESSONS LEARNED

This section highlights key lessons learned through an analysis of the RIMIS Concept of Operations and through discussion with personnel involved in its development and use.

- It is prudent to contract a local consultant who is privy to the inner workings of the region to be considered. This will eliminate unnecessary delays due to the consultant becoming familiar with the region, its politics, and its key players/stakeholders.

- Frequent review of the progress of work by supporting agencies is not only necessary, but vital. This is true whether the agencies are DOTS, emergency services, etc. They must be actively involved and as such the final product will be a true reflection of a concerted effort which will be beneficial to all.

- There must be no biases, particular stakeholders should not have the "edge" when it comes to making decisions so that the final product does not benefit an individual set of organizations more than others. In other words there must be equity.

- A Metropolitan Planning Organization (MPO) is well positioned to lead the effort in developing a regional Concept of Operations because it, generally, does not operate systems, and as such, are relatively objective.

- It is vital to have good coordination amongst participating agencies.

- Continuity of staff involvement is critical. In the development of the RIMIS Concept of Operations, there was significant staff turnover in many of the stakeholder agencies. This required frequent "re-education." To the extent possible, maintaining staff continuity will expedite the process.

7.5 SPECIFIC LITERATURE SUPPORTING THIS CHAPTER:

- Delaware Valley Region Planning Commission. "*RIMIS Concepts of Operations (Conops) Document.*" April 2006

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